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BAKER BOTTS L.L.P.
2001 ROSS AVENUE
6TH FLOOR
DALLAS, TX 75201

EXAMINER	
VAN HANDEL, MICHAEL P	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/932,867
Filing Date: August 17, 2001
Appellant(s): BUABBUD, GEORGE H.

Charles S. Fish
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 2, 2007 appealing from the Office action mailed December 29, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect, due to a typo. The appellant states that "A Response to Examiner's Action was filed on October 3, 2005 in response to an Office Action issued June 1, 2005;" however, the examiner notes that the aforementioned Office Action was issued July 1, 2005. The examiner further notes, for completeness sake, that the Amendment After Final filed February 28, 2006 was entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,615,246	Beveridge	3-1997
6,577,414	Feldman et al.	6-2003

Kitizawa et al., "Fiber-Optic Subscriber System Based on Passive Optical Network Architecture" Hitachi Review Vol. 43 (1994), No. 2

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims **1-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (US 5615246) in view of Feldman et al. (US 6577414).

Claim **1**, Beveridge discloses a method of providing TV signals or multiple of subscribers and bidirectional telephonic communications to a multiplicity of subscribers through a single optical fiber (Fig. 5, 6) comprising the steps of transmitting light of wavelength carrying plain old telephone service (POTS) telephonic signals from a plurality of telephone related services and TV signals from a TV signal source through an optical fiber from a 1st end to a 2nd end and transmitting the **POTS** telephonic electrical signals to a plurality of telephone related devices and the second electrical signals to a plurality of TV signal receiving devices (Col. 8, lines 19-Col. 9, lines 23);

Beveridge does not clearly discloses "transmitting light at a first wavelength carrying plain old telephone service (POTS) telephonic signals from a first plurality of telephone related devices and at a second wavelength carrying TV signals from a TV signal source through an optical fiber from a first end to a second end; receiving said first wavelength of light and generating first electrical signals within a first frequency band and representative of said plurality

of POTS telephonic signals; receiving said second wavelength of light and generating second electrical signals within a second frequency band and representative of said TV signals."

Feldman discloses a method of providing TV signals or multiple of subscribers and bidirectional telephonic communications to a multiplicity of subscribers through a single optical fiber (Fig. 1) comprising the steps of transmitting light at a first wavelength carrying telephonic signals from a first plurality of telephone related devices and at a second wavelength carrying TV signals from a TV signal source through an optical fiber from a first end to a second end (Col. 5, lines 25-45); receiving said first wavelength of light and generating first electrical signals within a first frequency band and representative of said plurality of telephonic signals (Fig. 4; Col. 6, lines 45-65+); receiving said second wavelength of light and generating second electrical signals within a second frequency band and representative of said TV signals (Fig. 4; Col. 4, lines 49-56; 66-Col. 5, lines 25); transmitting said telephonic electrical signals to a plurality of telephone related devices and said second electrical signals to a plurality of TV signal receiving devices (Fig. 4; Col. 4, lines 66-Col. 5, lines 25); generating a plurality of return electrical telephonic signals at said first frequency band representative of return telephonic information and a plurality of TV related electrical signals at a third frequency band representative of TV related information from said plurality of subscribers (Col. 6, lines 22-46); multiplexing said electrical signals carrying said return telephonic signals at said first frequency band and said TV related electrical signals carrying said TV related information at said third frequency band (Col. 7, lines 35-43); receiving said multiplexed electrical signals and generating light at said first wavelength representative of said return telephonic signals and said TV related information (Fig. 4, Col. 6, lines 63-Col. 7, lines 25); transmitting light at said first wavelength

and carrying said return telephonic signals and said TV related information through said optical fiber from said second end to said first end (see Fig. 1); receiving said light carrying said return telephonic signals and said TV related information and generating a plurality of third electrical signals representative of said return telephonic signals and a plurality of fourth electrical signals representative of said TV related information (Fig.5); and transmitting said third electrical signals to said first plurality of telephone related devices and said fourth electrical signals to said TV signal source (Col. 4, lines 38-65+). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Beveridge with Feldman in order to improve the CATV Hybrid fiber-coax (HFC) network by combining multiple services, i.e., analog video, audio, telephony, Internet access, into a two-way composite optical signal using separate RF sub-carriers (see Summary of the invention).

Claim **2**, Beveridge in view of Feldman (see Fig. 1, el. 150) further discloses wherein said first wavelength of light is 1310 nanometers and said second wavelength of light is 1550 nanometers.

Claim **3**, Beveridge in view of Feldman further meets "wherein the highest frequency of the 1st frequency band is less than about 60Khz" because Beveridge' s combined signal over the HFC network carries upstream/downstream POTS telephony signals to standard telephone wiring in the CPE (Beveridge, see Fig. 5; Col. 8, lines 44-52), wherein the frequency band that carries POTS telephonic signal is known to be less than 60Khz .

Claim **4**, Beveridge in view of Feldman (upstream; Fig. 3) further discloses wherein said third frequency band is between about 5 and about 50 MHZ.

Claim **5**, Beveridge in view of Feldman (downstream; Fig. 3) further discloses wherein said second frequency band is between about 50 MHZ and about 800 MHZ.

2. Claim **7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Beveridge (US 5615246) in view of Feldman et al. (US 6577414), and further in view of Fiber-Optic Subscriber System based on passive Optical Network Architecture (Hitachi Review Vol. 43, 1994 by Masakazu Kitazawa et al.).

Claim **7**, Beveridge in view of Feldman teaches all limitations of claim 7, as discussed in method claim 1. Since, Beveridge in view of Feldman (Fig. 1, el. 152 and 158) discloses bi-directional transmission through a HFC network; therefore, Beveridge in view of Feldman meets "communication signal for carrying bidirectional POTS telephonic signal between the 1st user and the 2nd user".

As to TCM bi-directional telephonic signals transmission through a HFC network, Beveridge in view of Feldman does not clearly disclose it.

Masakazu discloses the use of TCM bi-directional telephonic signals transmission through a fiber network (see Fig. 1 and introduction page 53-54) for economical reasons, as suggested by Masakazu. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Beveridge in view of Feldman using TCM technique to implement bi-directional transmission through a fiber network, as taught by Masakazu, so to provide an economical optical subscriber network that could carry analog telephone, narrowband ISDN and broadband service including video (see Introduction).

(10) Response to Argument

Regarding claims **1-5** and **7**, the appellant argues that the examiner has not established that any of the criteria for a prima facie case of obviousness has been met.

Argument 1: There is no suggestion or motivation in the Beveridge patent or the Feldman et al. patent to combine them as proposed by the examiner.

Regarding claims **1-5** and **7**, the appellant argues that the examiner has failed to show that there is some teaching, suggestion, or motivation to combine the Beveridge patent and the Feldman et al. patent as proposed. The examiner respectfully disagrees. Beveridge discloses a fiber/coax architecture in which telephony and video signals are transported through a common integral network. Central office 13 includes telephony switch 11 and video transmission equipment 12. Telephony signals from switch 11 are supplied to a digital conversion RF modulator/demodulator unit 34. The telephony signals are modulated to be transported on the analog passband fiber optic cable 14. The video signals from video transmission equipment 12 are combined with the telephony signals in a combiner transceiver unit 35. These optical signals are sent and received on fiber optic cable 14 to/from an optical node 17, which includes an optical/electrical conversion unit (col. 8, l. 19-43 & Figs. 5, 6). The combined telephony and video signals from optical node 17 are carried on coaxial cable 24. The telephony signal is supplied to telephone 27 on subscriber premises 21. The video signals are supplied to television 26 on subscriber premises 21 (col. 8, l. 44-52 & Figs. 5, 6).

Feldman et al. discloses a FTTH/C network that integrates signals carrying broadcast CATV services with high-speed Internet access and telephony, so that essentially all residential

telecommunications services are provided in a single network, based on a single fiber and a single simple transceiver in an optical network unit. Multiple services (e.g., analog video, digital video, cable-modem based Internet access) are multiplexed using separate RF subcarriers and the delivered signals are compatible with existing consumer appliances (e.g., TVs, VCRs, cable modems, etc.)(col. 2, l. 54-64). CATV and data signals from a headend to a service provider are delivered by combining the CATV and data signals from the headend into a composite optical signal, transmitting the composite optical signal downstream over a passive optical network (PON) using coarse wavelength division multiplexing (CWDM) for duplexing, converting the transmitted composite optical signal to electrical signals, and routing the electrical signals to the service subscriber for use (col. 2, l. 65-67; col. 3, l. 1-7; & Fig. 1).

Both Beveridge and Feldman et al. are directed to the integration of video and telephony for transmission over hybrid fiber coax (HFC) networks. Beveridge is directed to carrying plain old telephony signals and video signals on a common HFC transport system (col. 8, l. 19-23). Feldman et al. is directed to the integration of broadcast CATV services signals and high-speed Internet and telephony signals in a single HFC network, based on a single fiber and a single simple transceiver in an optical network unit (col. 2, l. 54-64). Feldman et al. solves many of the problems of the HFC network by multiplexing the multiple services using separate RF subcarriers (col. 2, l. 30-50, 60-64). Thus, the examiner maintains that Feldman et al. fully supports the examiner's asserted motivation (to improve the CATV Hybrid fiber-coax (HFC) network by combining multiple services, i.e., analog video, audio, telephony, Internet access, into a two-way composite optical signal using separate RF sub-carriers) as stated in the Office Action mailed 12/29/2005.

Argument 2: A reasonable expectation of success has not been shown by the examiner.

Regarding claims **1-5** and **7**, the appellant argues that the examiner, without improper hindsight, has not addressed how the proposed combination of the Beveridge patent and the Feldman et al. patent would have any success whatsoever let alone a reasonable expectation of success. The examiner respectfully disagrees. As noted in the examiner's response to Argument 1, both Beveridge and Feldman et al. are directed to the integration of video and telephony for transmission over hybrid fiber coax (HFC) networks. Beveridge is directed to carrying plain old telephony signals and video signals on a common HFC transport system (col. 8, l. 19-23). Feldman et al. is directed to the integration of signals carrying broadcast CATV services and signals carrying high-speed Internet access, telephony, etc. into a single HFC network, based on a single fiber and a single simple transceiver in an optical network unit (col. 2, l. 54-64). Feldman et al. further indicates the cable industry's desire to add two-way services to CATV networks (col. 2, l. 25-29), but notes many problems involved in adding the services (col. 2, l. 30-50). Feldman et al. solves many of these problems by multiplexing the multiple services using separate RF subcarriers (col. 2, l. 30-50, 60-64). Thus, the examiner maintains that the Feldman et al. reference is representative of a reasonable expectation of success were one of ordinary skill in the art to modify Beveridge with Feldman et al. in order to improve the CATV Hybrid fiber-coax (HFC) network by combining multiple services, i.e., analog video, audio, telephony, Internet access, into a two-way composite optical signal using separate RF sub-carriers.

Argument 3: The examiner has not shown that the proposed combination of Beveridge and Feldman et al. teaches or suggests all of the claim limitations.

Regarding claims **1-5** and **7**, the appellant argues that Feldman et al. fails to disclose receiving first and second wavelengths of light as required by the claimed invention. The appellant specifically argues that Feldman et al. recites a downstream wavelength of 1.5 μm and an upstream wavelength of 1.3 μm. The appellant further argues that Feldman et al. discloses only one wavelength being used in each transport direction over the optical fiber. The examiner respectfully disagrees.

Feldman et al. discloses combining CATV and data signals (targeted services) from a headend into a composite optical signal, transmitting the composite optical signal downstream over a passive optical network (PON) using coarse wavelength division multiplexing (CWDM) for duplexing, converting the transmitted composite optical signal to electrical signals, and routing the electrical signals to the service subscriber for use (col. 3, l. 1-7). The targeted services channels (e.g., data, Internet, narrowcast video telephony) are inserted at a hub 126 (col. 5, l. 25-28). Feldman et al. further discloses that the wavelengths of the broadcast and inserted TS signals must be different in order to prevent interference noise (col. 5, l. 40-42). Thus, the examiner maintains that Feldman et al. discloses receiving first and second wavelengths of light.

Further regarding claims **1-5** and **7**, the appellant argues that Feldman et al. fails to disclose transmitting light at the first wavelength that carries a return plain old telephone service telephonic signals with TV related information as provided by the claimed invention. The examiner respectfully disagrees. The appellant specifically argues that Feldman et al. discloses

that the wavelengths used over its optical fiber are different for the downstream and upstream transport.

As noted above, Feldman et al. discloses combining CATV and targeted services channels (e.g., data, internet, IP telephony, VOD, narrowcast video, etc.) at a hub 126 (col. 5, l. 12-13, 40-42 & col. 6, l. 18-20). Feldman et al. further discloses that a return (upstream) leg for the targeted services path receives upstream signals from CWDM 132, which travels through an optical combiner 136, to a receiver 138, and into a cable modem termination system (CMTS) and associated Internet Protocol (IP) router 140 (col. 4, l. 39-43). The upstream targeted services can again be inserted at the hub to be distributed to end-users by way of the CMTS and IP router 140 (col. 5, l. 25-31 & Figs. 1, 2, 5). Feldman et al. illustrates this with a connection between CMTS/IP router 140, 240 and transmitter 134, 234, 434 in hub 126 or local headend 110 (Figs. 1, 2, 5). This functionality is particularly relevant in the use of a telephony targeted service, where voice packets would be routed to and from the communicating users via the CMTS/IP router. An Optical-Electrical Converter (OEC) 150 generates signals in the 1.3 μm wavelength band representative of telephonic signals from a first end-user (col. 5, l. 51-51-52 & Fig. 1). These signals are transmitted to hub 126, where they are combined with upstream signals from other OECs at optical combiner 136. The upstream telephonic signals are combined at a 2x2 coupler with broadcast video signals and transmitted to a second end-user with whom the first end-user is communicating (col. 5, l. 25-31, 38-42; & Figs. 1, 2). This teaches transmitting light at a first wavelength carrying telephone service telephonic signals from a first plurality of telephone related devices and at a second wavelength carrying TV signals from a TV signal source through an optical fiber from a first end (hub 126) to a second end (second end-user 180). The upstream

telephonic signal representative of the second end-user's response is then combined with any other interactive signals from the second end-user (col. 5, l. 51-53), such as those from a set top box as shown in Figure 4. The upstream signals are sent to an OEC 150 and further transmitted in the 1.3 μm wavelength band to a hub 126 (Figs. 1, 4). This teaches generating light at said first wavelength representative of said telephone service telephonic signals and said TV related information and transmitting light at said first wavelength and carrying said return telephone service telephonic signals and said TV related information through said optical fiber from said second end to said first end.

Still further regarding claims **1-5** and **7**, the appellant argues that the claimed invention includes transmitting light at the first wavelength carrying a return plain old telephone service telephonic signals with TV related information. The examiner acknowledges that the claim includes this limitation virtually word for word and has addressed the appellant's argument above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Michael Van Handel

Conferees:

Chris Kelley

Vivek Srivastava

CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600